Lapbooking Guide At-A-Glance

Overview

1. Lapbook Overview

See how to put together the location lapbook on the lapbook overview sheet, plus the supplies needed for the demonstrations.

Chapter Lessons

2. Read

Know what to read each week in the corresponding Sassafras Science novel. Plus, get options for additional encyclopedia pages to read and for books to check out from the library. The novel contains the essential information for each week, but if you want to dig deeper, we've got you covered!

3. Write

Build your students' science vocabulary with words relevant to the topics the students are studying. Plus, get the directions for the mini-books that your students will be making to correspond to each location.

4. Do

Know what materials you will need to do a weekly hands-on science activity that coordinates with the topic. This section lists the supplies you will need, provides easy-to-follow steps, and explanations to make it a snap to complete the scientific demonstration.

5. Two Lessons Per Location

Find two lessons per location, each following the same format of read, write, and do.

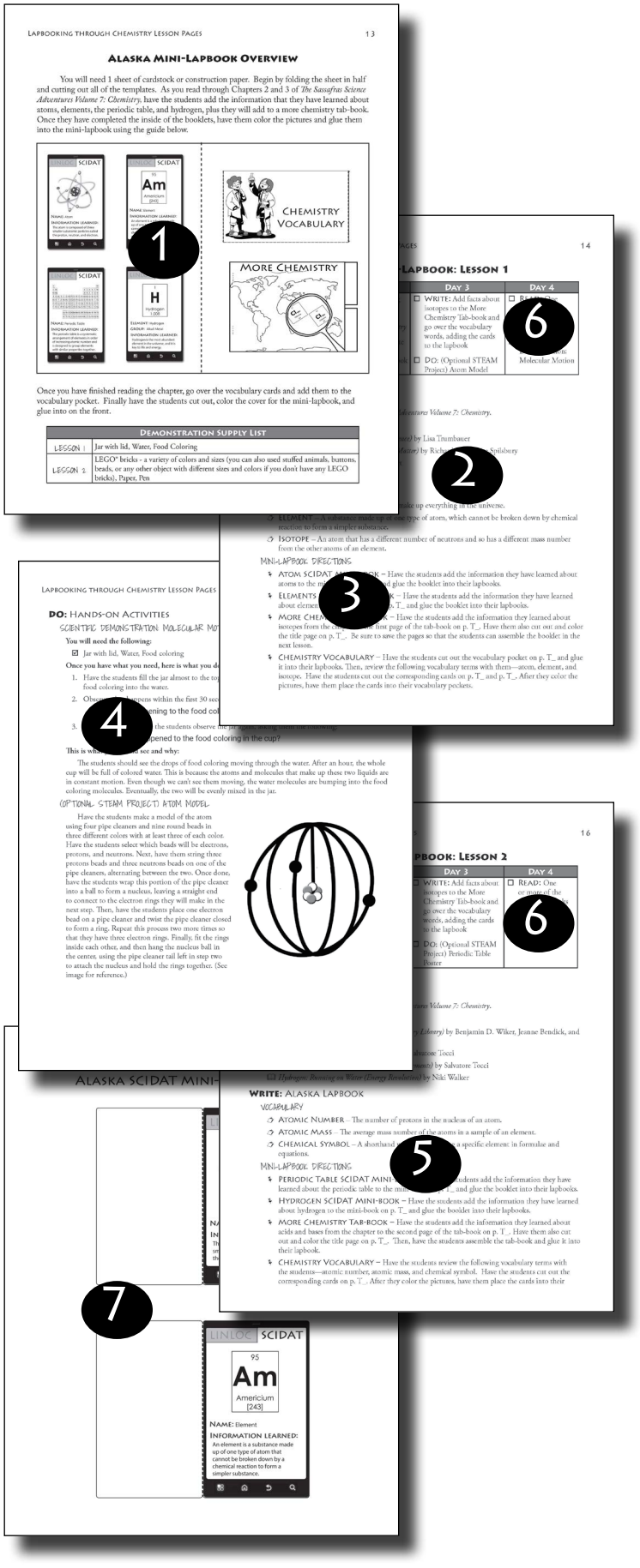
6. Optional Schedule

See how you could plan out each lesson over a week with the 4-day grid schedule. These schedules will make planning your weekly science adventure a snap!

The Rest

7. Templates and More

In the appendix, you will find project templates and a full glossary. At the back of this guide, you will find all of the mini-book templates for the lapbooks.



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Quick Start Guide

Welcome to your super, scientific journey with the Sassafras Twins!! The information and activities in this guide will help you turn a simple adventure novel into a simple science program for your early elementary students. Let's start by answering three pressing questions!

What will we learn?

Students will learn about chemistry through a study of the periodic table. See p. 9 for a list of the topics explored in this program.

What do I need?

In addition to this lapbooking guide, you will need the following materials:

1. **Novel –** All the main reading assignments are from *The Sassafras Science Adventures Volume 7: Chemistry*. You can get the paperback novel, the Kindle version, or the audiobook.
2. **Demonstration Supplies –** See a full list on p. 10, or save yourself time and purchase the *Sassafras Science Year 4 Experiment Kit*, which includes the materials for both volume 7 and volume 8.

What will a week look like?

Each week you and your students will do the following activities:

- **Read** scientific information from an adventure-filled novel, also known as a living book, and discuss what you read.
- **Write** down what the students have learned on the journey in the coordinating mini-book.
- **Do** hands-on science through demonstrations using the directions found in this guide.

For a more detailed explanation of the components in each lesson, we highly recommend checking out the peek inside this guide on p. 6 and reading the introduction on pp. 7-9. The chapter lessons begin on p. 10.

THE SASSAFRAS SCIENCE ADVENTURES

As the author and publisher of *Lapbooking through the Chemistry with the Sassafras Twins,* I encourage you to contact me with any questions or problems that you might have concerning this program at support@elementalscience.com. I, or a member of our team, will be more than happy to assist you. I hope that you will enjoy creating memories using *Lapbooking through the Chemistry with the Sassafras Twins*!

~ Paige Hudson

Lapbooking through Chemistry
Table of Contents

Introduction

Lapbooking through Chemistry with the Sassafras Twins is a unique and versatile program that leads you through a survey of the periodic table using a series of eight mini-lapbooks to document the journey. The program is centered around the living book, *The Sassafras Science Adventures Volume 7: Chemistry*. It is designed to be a gentle approach to homeschool science education based on the Unit Study method suggested in *Success in Science: A Manual for Excellence in Science Education* by Bradley and Paige Hudson.

What is a lapbook?

Lapbooks are educational scrapbooks that fit into the lap of a students. Typically they are a collection of related mini-books on a certain subject that have been glued into a file folder for easy viewing, but they can also include pictures or projects that the students have completed. In the same way that notebooking does not require regurgitation of facts; lapbooking causes the students to interact with the materials instead of just responding to comprehension questions. To learn more about lapbooking, you can read the following articles:

- **What are lapbooks? –** This article shares what lapbooks are and how you can use them.
  - https://elementalscience.com/blogs/news/what-are-lapbooks
- **3 Common Misconceptions about Lapbooks –** This article looks at three of the most common mistaken beliefs about lapbooks.
  - https://elementalscience.com/blogs/news/3-misconceptions-about-lapbooks

What is included in this program?

Lapbooking through Chemistry with the Sassafras Twins includes all of the basic components of elementary science education that are explained in *Success in Science*.

1. **{Read}** Science Books – Elementary students are an empty bucket waiting to be filled with information and science-oriented books are a wonderful way to do that. These books can include appropriate children's science encyclopedias, living books for science and/or children's non-fiction science books. In this program, the reading assignments are from the living book, *The Sassafras Science Adventures Volume 7: Chemistry.* I have also included a list of additional books from the library.
2. **{Write}** Lapbooks – The purpose of the written component for elementary science education is to verify that the students have placed at least one piece of information into their knowledge bucket. You can use notebooking sheets, lapbooks, and/or vocabulary words to fulfill this requirement. This unit includes all the templates and pictures you will need to complete a series of mini-lapbooks as well as vocabulary words to coordinate with each lesson.
3. **{Do}** Hands-on Activities – Scientific demonstrations, observations, and STEAM* projects are meant to spark the students' enthusiasm for learning science, to work on their observation skills and to demonstration the principles of science for them. This component of elementary science education can contain scientific demonstrations, hands-on projects and/or nature studies.

Each lesson in this guide includes suggested hands-on science activities to fulfill this section of elementary science instruction.

*STEAM: Science, Technology, Engineering, Art, and Math

These concepts are more fully developed in our book, or you can read the following articles from to learn more:

- **10 Posts you must read about living books –** This article shares links to 10 different articles that will help you to gain a clear picture of what living books are.
  - https://elementalscience.com/blogs/news/10-posts-you-must-read-about-living-books
- **The Basics of Notebooking –** This article details the basic components of notebooking along with how a few suggestions on what notebooking can look like.
  - https://elementalscience.com/blogs/news/what-is-notebooking
- **Scientific Demonstrations vs. Experiments –** This article explains the difference between scientific demonstrations and experiments along with when and how to employ these methods.
  - http://elementalscience.com/blogs/news/89905795-scientific-demonstrations-or-experiments

HOW TO USE THIS PROGRAM

Each lesson is designed to be completed over several days or up to one week. The lesson contains reading assignments from *The Sassafras Science Adventures Volume 7: Chemistry*. You can choose to break each chapter up over two days or read it all at once. If you are using this program with younger students, read the selected chapters to them. If you are using this program with older students, you can choose to have them read the assigned chapters on their own or you can read the selected pages to them. (NOTE—Chapter 1 and 18 of *The Sassafras Science Adventures Volume 7: Chemistry* are not scheduled as a part of this program. You will need to read chapter 1 before beginning and chapter 18 after you finish.)

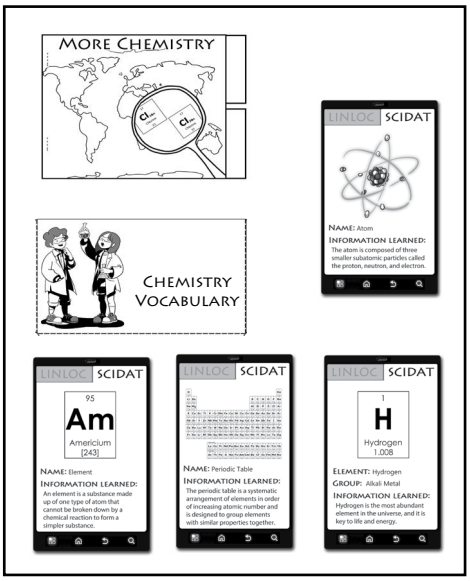
After you complete the reading assignment, have the students tell you what they have learned about the topics and the continent from the selection. This can simply be what they found to be the most interesting or something new that they have learned from the reading. You can choose to write the sentences for them or have them copy the words into the mini-book. Once the students have finished writing, have them color the related pictures. When the mini-book is complete, glue it into the lapbook using the overview sheet as a guide.

At another time during the week, review the vocabulary words with the students. You can have them memorize each one or just go over the words with the lesson. I have included a set of blank vocabulary cards in the Appendix on pp. 57-59. If you use the blank vocabulary cards, have the students look up the vocabulary words in the science encyclopedia of your choice or the glossary included in the Appendix on pp. 60-61.

Finally, you can finish the lesson by doing the related scientific demonstration. If you would like to have your students write a lab report, I have included a template for you in the Appendix on pp.

53-54. After you finishing the demonstration, you can finish the week by reading to the students one of the related books from the additional book list. If you would like to record what they have learned from these books, I have included a book narration sheet in the Appendix on p. 55.

How long it should take



I have included possible schedules for completed each mini-lapbook. These schedules spread the work for each lesson out over 4 days. If you choose to complete the program in this manner, each mini-lapbook will take you two weeks to complete, which means that this program will provide you about a semesters worth of material.

Options - 8 mini-lapbooks or 1 full lapbook

If you would like to create one full lapbook instead of a series of eight mini-lapbooks, simply arrange the interior components of each onto one full sheet of construction paper or one side of a file folder like below. We have included a cover for a full lapbook in the Appendix on p. _. See a sample of a full lapbook in the following video:

https://www.youtube.com/watch?v=4LMhkVcXYfk&t=3s

Topics Covered

The Sassafras Science Adventures Volume 7: Chemistry covers a variety of aspects of chemistry, such as:

- Compounds
- Reactions
- Atoms
- Isotopes
- Elements
- The Periodic Table
- Acids and Bases
- Mixtures and Solutions
- States of Matter
- Oxidation and Reduction
- Magnetism
- Nuclear Energy
- Conductivity
- Organic Chemistry
- Minerals
- Bonding
- Electrolysis
- Distillation
- Air
- Hydrocarbons
- Polymers

In the process, you will learn about the following specific topics:

- Hydrogen
- Alkali Metals
- Sodium
- Potassium
- Alkaline Earth Metals
- Magnesium
- Calcium
- Transition Metals
- Gold
- Zinc
- Iron
- Lanthanides
- Neodymium
- Actinides
- Uranium
- Main Group Metals
- Aluminum
- Metalloids
- Silicon
- Nonmetals
- Carbon
- Oxygen
- Nitrogen
- Halogens
- Chlorine
- Iodine
- Noble Gases
- Helium
- Neon

Supply List

The following supplies will be needed to complete the scientific demonstrations suggested in this guide.

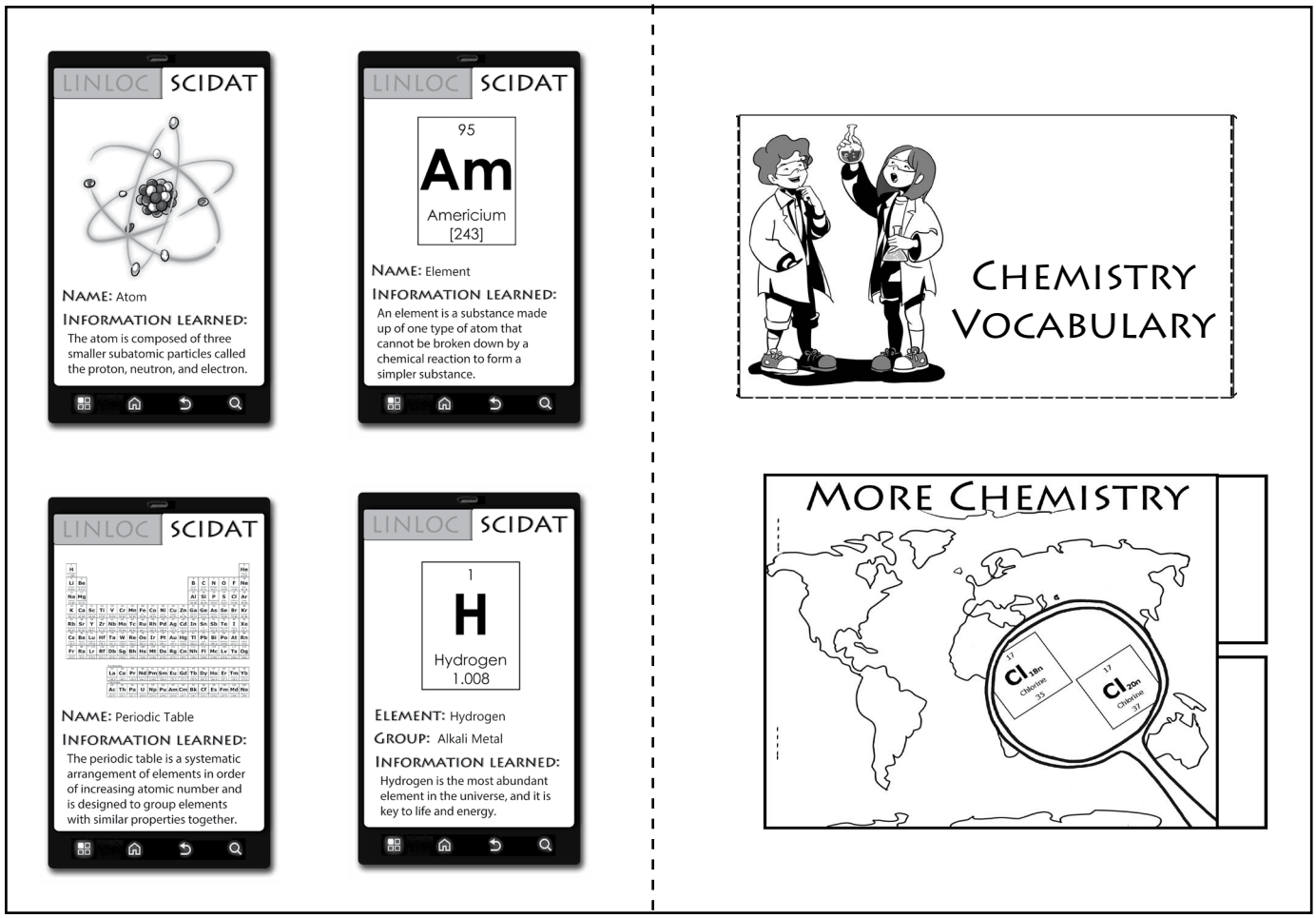
Chapter	Supplies Needed
2: Molecular Motion	Jar with lid, Water, Food Coloring
3: Table Sorting	LEGO® bricks - a variety of colors and sizes (you can also used stuffed animals, buttons, beads, or any other object with different sizes and colors if you don't have any LEGO bricks), Paper, Pen
4: Which One Freezes First?	3 Cups, Water, Food coloring, Salt
5: Magnesium Solutions	Epsom salts, Ammonia, Water, Clear cup
6: Metal Plating	White vinegar, Salt, 6 Pennies, Glass cup, 2 Iron nails
7: Rusted	Steel wool, Vinegar, Jar with lid
8: Magnetic Exploration	Neodymium magnets, Several types of objects (marbles, paper clips, paper, pins, plastic spoons, and more)
9: Radioactive Decay	Bite-sized food, such as raisins or cereal puffs or M&M's, Timer
10: Aluminum Gel	Alum powder, Ammonia, Clear jar, Water
11: Silicone Putty	Silly Putty™ or other silicone polymer, Baggie, Ice, Bowl, Hot water
12: Shiny Pennies	Can of dark cola soda, Glass, Dirty pennies
13: Oxygen Overflow	Yeast, Water, Cup, Empty water bottle, Hydrogen peroxide, Food coloring, Liquid dish soap
14: Fluoride Help	2 Eggs, Toothpaste with fluoride, Plastic wrap, White vinegar, 2 Cups, Permanent marker
15: Iodine Swab	Small piece of potato or a piece of bread, Iodine swab
16: Funny Voice	Helium-filled balloon, Scissors
17: Air In There	Small cup, Tissue paper, Water, Bucket or large bowl

*Note—There are no suggested activities for chapters 1 and 18 in the lapbooking guide.

Lesson Pages

Alaska Mini-Lapbook Overview

You will need 1 sheet of cardstock or construction paper. Begin by folding the sheet in half and cutting out all of the templates. As you read through Chapters 2 and 3 of *The Sassafras Science Adventures Volume 7: Chemistry,* have the students add the information that they have learned about atoms, elements, the periodic table, and hydrogen, plus they will add to a more chemistry tab-book. Once they have completed the inside of the booklets, have them color the pictures and glue them into the mini-lapbook using the guide below.



Once you have finished reading the chapter, go over the vocabulary cards and add them to the vocabulary pocket. Finally have the students cut out, color the cover for the mini-lapbook, and glue into on the front.

Demonstration Supply List	
LESSON 1	Jar with lid, Water, Food Coloring
LESSON 2	LEGO® bricks - a variety of colors and sizes (you can also used stuffed animals, buttons, beads, or any other object with different sizes and colors if you don't have any LEGO bricks), Paper, Pen

Alaska Mini-Lapbook: Lesson 1

Day 1	Day 2	Day 3	Day 4
☐ Read: "Atomic Bits" of Chapter 2 in *SSA Volume 7: Chemistry* ☐ Write: Complete the Atoms SCIDAT Mini-book	☐ Read: "Dancing Elements" of Chapter 2 in *SSA Volume 7: Chemistry* ☐ Write: Complete the Elements SCIDAT Mini-book	☐ Write: Add facts about isotopes to the More Chemistry Tab-book and go over the vocabulary words, adding the cards to the lapbook ☐ Do: (Optional STEAM Project) Atom Model	☐ Read: One or more of the additional books to read ☐ Do: Scientific Demonstration: Molecular Motion

Read: Science Books

Reading Assignments

📖 Read Chapter 2 of *The Sassafras Science Adventures Volume 7: Chemistry*.

Additional Books from the Library

📖 *What Are Atoms? (Rookie Read-About Science)* by Lisa Trumbauer

📖 *Atoms and Molecules (Building Blocks of Matter)* by Richard and Louise Spilsbury

📖 *Atoms (Simply Science)* by Melissa Stewart

Write: Alaska Lapbook

Vocabulary

- Atom – The tiny building blocks that make up everything in the universe.
- Element – A substance made up of one type of atom, which cannot be broken down by chemical reaction to form a simpler substance.
- Isotope – An atom that has a different number of neutrons and so has a different mass number from the other atoms of an element.

Mini-Lapbook Directions

- Atom SCIDAT Mini-book – Have the students add the information they have learned about atoms to the mini-book on p. T6 and glue the booklet into their lapbooks.
- Elements SCIDAT Mini-book – Have the students add the information they have learned about elements to the mini-book on p. T6 and glue the booklet into their lapbooks.
- More Chemistry Tab-book – Have the students add the information they learned about isotopes from the chapter to the first page of the tab-book on p. T4. Have them also cut out and color the title page on p. T4. Be sure to save the pages so that the students can assemble the booklet in the next lesson.
- Chemistry Vocabulary – Have the students cut out the vocabulary pocket on p. T8 and glue it into their lapbooks. Then, review the following vocabulary terms with them—atom, element, and isotope. Have the students cut out the corresponding cards on p. T8. After they color the pictures, have them place the cards into their vocabulary pockets.

DO: Hands-on Activities

Scientific Demonstration: Molecular Motion

You will need the following:

☑ Jar with lid, Water, Food coloring

Once you have what you need, here is what you do:

1. Have the students fill the jar almost to the top with room-temperature water and drop several drops of food coloring into the water.
2. Observe what happens within the first 30 seconds, asking them the following:

   ? What is happening to the food coloring in the cup?

3. Wait an hour, and have the students observe the jar again, asking them the following:

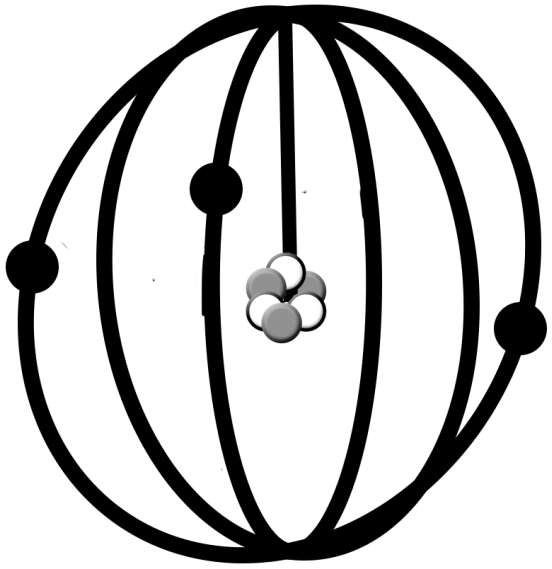
   ? What has happened to the food coloring in the cup?

This is what you should see and why:

The students should see the drops of food coloring moving through the water. After an hour, the whole cup will be full of colored water. This is because the atoms and molecules that make up these two liquids are in constant motion. Even though we can't see them moving, the water molecules are bumping into the food coloring molecules. Eventually, the two will be evenly mixed in the jar.

(Optional STEAM Project) Atom Model

Have the students make a model of the atom using four pipe cleaners and nine round beads in three different colors with at least three of each color. Have the students select which beads will be electrons, protons, and neutrons. Next, have them string three protons beads and three neutrons beads on one of the pipe cleaners, alternating between the two. Once done, have the students wrap this portion of the pipe cleaner into a ball to form a nucleus, leaving a straight end to connect to the electron rings they will make in the next step. Then, have the students place one electron bead on a pipe cleaner and twist the pipe cleaner closed to form a ring. Repeat this process two more times so that they have three electron rings. Finally, fit the rings inside each other, and then hang the nucleus ball in the center, using the pipe cleaner tail left in step two to attach the nucleus and hold the rings together. (See image for reference.)



Alaska Mini-Lapbook: Lesson 2

Day 1	Day 2	Day 3	Day 4
☐ Read: "Periodic and Romantic Tables" of Chapter 3 in *SSA Volume 7: Chemistry* ☐ Write: Complete the Periodic Table SCIDAT Mini-book	☐ Read: "Fueling Hydrogen" of Chapter 3 in *SSA Volume 7: Chemistry* ☐ Write: Complete the Hydrogen SCIDAT Mini-book	☐ Write: Add facts about isotopes to the More Chemistry Tab-book and go over the vocabulary words, adding the cards to the lapbook ☐ Do: (Optional STEAM Project) Periodic Table Poster	☐ Read: One or more of the additional books to read ☐ Do: Scientific Demonstration: Table Sorting

Read: Science Books

Reading Assignment

📖 Read Chapter 3 of *The Sassafras Science Adventures Volume 7: Chemistry*.

Additional Books from the Library

📖 *The Mystery of the Periodic Table (Living History Library)* by Benjamin D. Wiker, Jeanne Bendick, and Theodore Schluenderfritz

📖 *The Periodic Table (True Books: Elements)* by Salvatore Tocci

📖 *Hydrogen and the Noble Gases (True Books: Elements)* by Salvatore Tocci

📖 *Hydrogen: Running on Water (Energy Revolution)* by Niki Walker

Write: Alaska Lapbook

Vocabulary

- Atomic Number – The number of protons in the nucleus of an atom.
- Atomic Mass – The average mass number of the atoms in a sample of an element.
- Chemical Symbol – A shorthand way of representing a specific element in formulae and equations.

Mini-Lapbook Directions

- Periodic Table SCIDAT Mini-book – Have the students add the information they have learned about the periodic table to the mini-book on p. T7 and glue the booklet into their lapbooks.
- Hydrogen SCIDAT Mini-book – Have the students add the information they have learned about hydrogen to the mini-book on p. T7 and glue the booklet into their lapbooks.
- More Chemistry Tab-book – Have the students add the information they learned about acids and bases from the chapter to the second page of the tab-book on p. T5. Have them also cut out and color the title page on p. T4. Then, have the students assemble the tab-book and glue it into their lapbook.
- Chemistry Vocabulary – Have the students review the following vocabulary terms with the students—atomic number, atomic mass, and chemical symbol. Have the students cut out the corresponding cards on p. T8. After they color the pictures, have them place the cards into their

vocabulary pockets.

- Alaska Mini-lapbook Cover – Have the students cut out the cover page on p. T3, color it, and glue it on the front of their mini-lapbooks.

DO: Hands-on Activities

Scientific Demonstration: Table Sorting

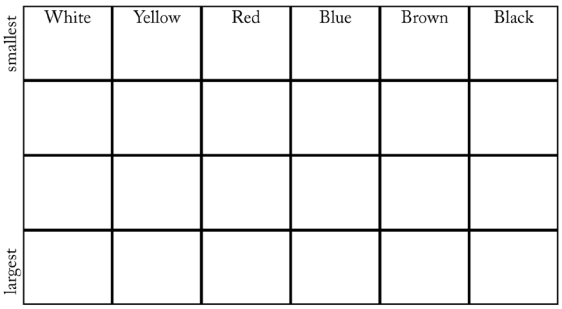
You will need the following:

- ☑ LEGO® bricks - a variety of colors and sizes (you can also used stuffed animals, buttons, beads, or any other object with different sizes and colors if you don't have any LEGO bricks), Paper, Pen

Once you have what you need, here is what you do:

1. Gather the LEGO bricks in an unorganized pile. Draw a four-by-six grid on the piece of paper. If you are using larger objects to sort, such as stuffed animals, you can create this grid on the floor with masking tape. Say the following to the students:

   > We are going to make a periodic table of (objects you are using). In this table, the (objects you are using) are going to get bigger as you go down the grid and darker as you go across.

   See the included grid for visual explanation.

4. Have the students sort the objects by size and color onto the grid. As they sort, share with them how the periodic table in chemistry is an organized assortment of elements set up in a grid, similar to how they are sorting their objects.

This is what you should see and why:

The point of this demonstrations is for the students to see the order that exists in the arrangement of the elements in the periodic table.

(Optional STEAM Project) Periodic Table Poster

This week, the students will begin their large, wall-sized periodic table or a small, lap-sized construction-paper version. Have the students draw the outline of the periodic table on a sheet of paper, or use full table found in the appendix on p. 56. They will begin to add groups next week.

Templates

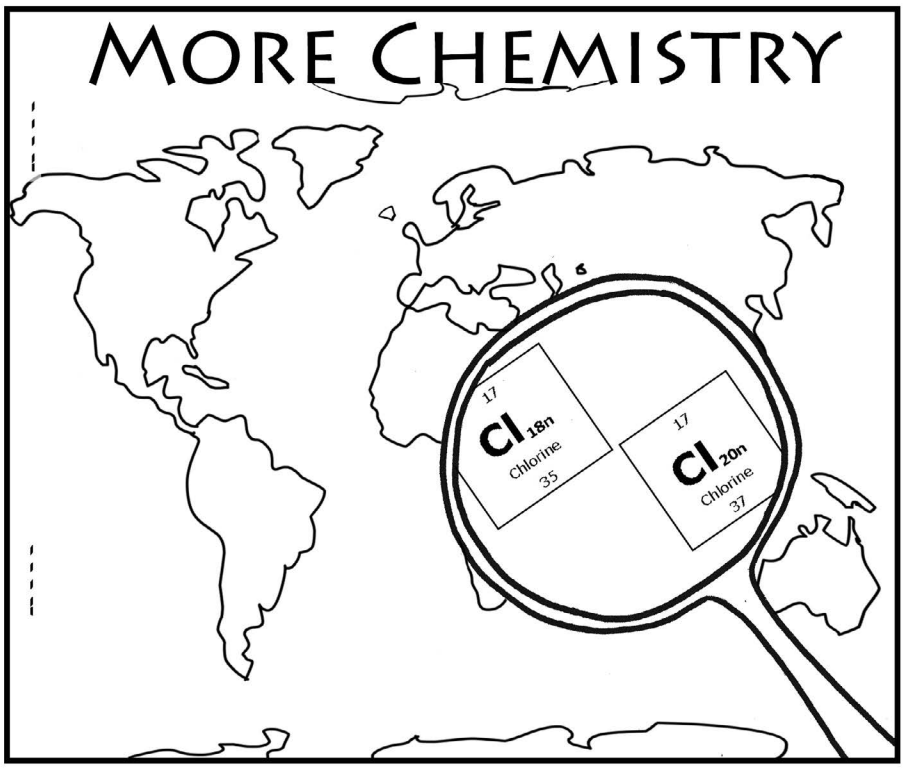
Alaska Mini-Lapbook Cover Page

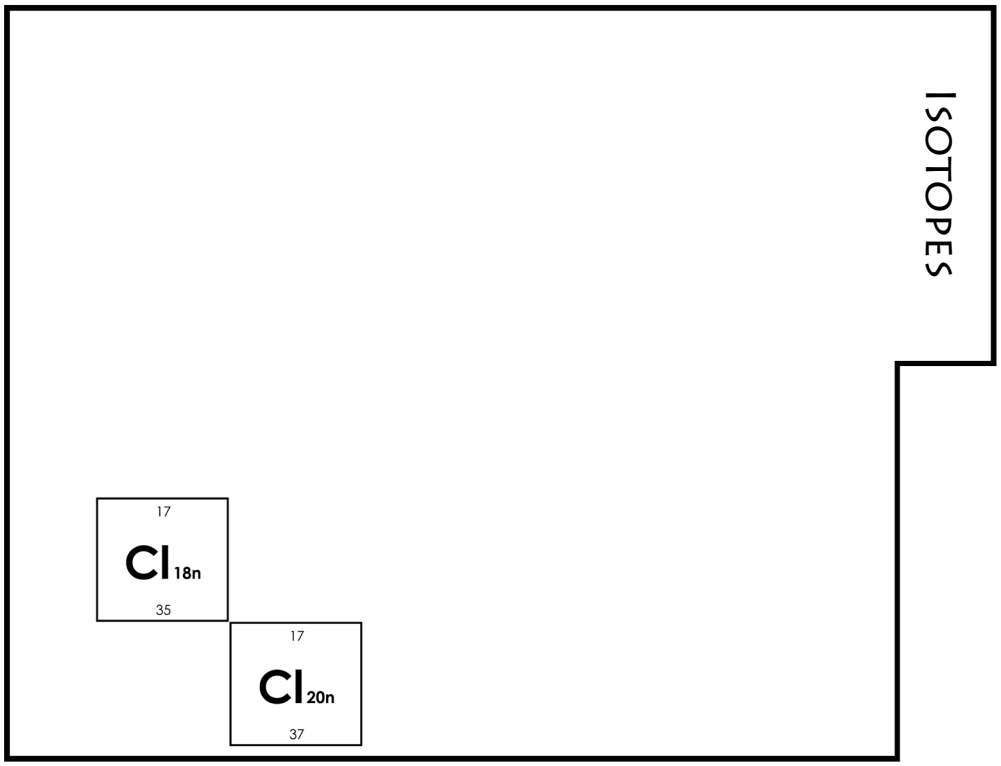
My Guide to Chemistry in Alaska

By: _____

& The Sassafras Twins

Alaska More Chemistry Tab-book Templates

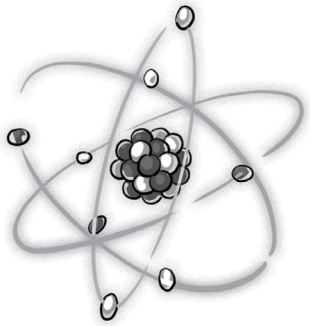




Alaska More Chemistry Tab-book Templates

Alaska SCIDAT Mini-book Templates

LINLOC SCIDAT



Name: Atom

Information learned:

The atom is composed of three smaller subatomic particles called the proton, neutron, and electron.

LINLOC SCIDAT

95

Am

Americium

[243]

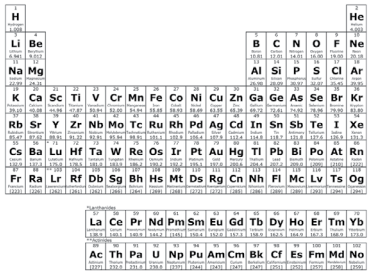
Name: Element

Information learned:

An element is a substance made up of one type of atom that cannot be broken down by a chemical reaction to form a simpler substance.

Alaska SCIDAT Mini-book Templates

LINLOC SCIDAT



Name: Periodic Table

Information learned:

The periodic table is a systematic arrangement of elements in order of increasing atomic number and is designed to group elements with similar properties together.

LINLOC SCIDAT

1

H

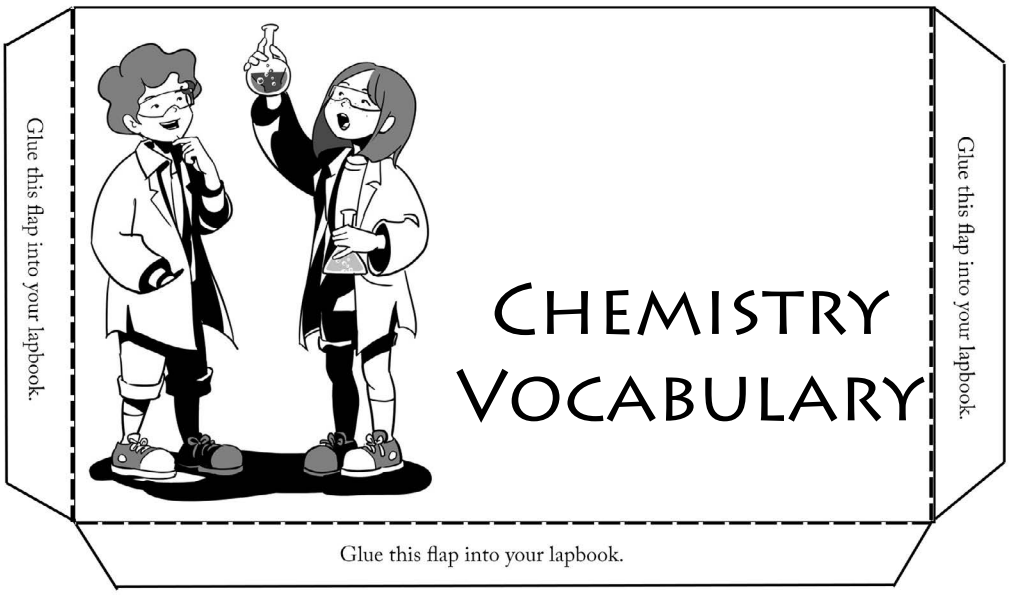
Hydrogen
1.008

Element: Hydrogen

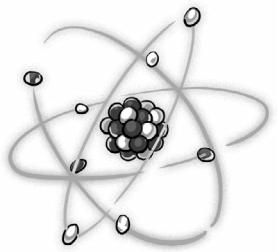
Group: Alkali Metal

Information learned:

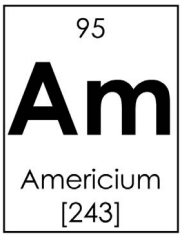
Hydrogen is the most abundant element in the universe, and it is key to life and energy.



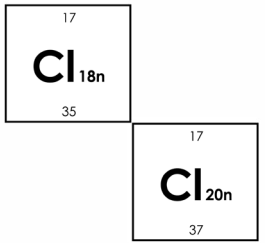
Chemistry Vocabulary



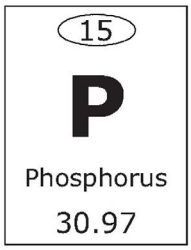
Atom – The tiny building blocks that make up everything in the universe.



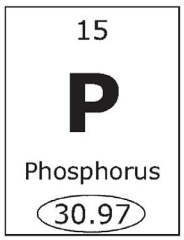
Element – A substance made up of one type of atom, which cannot be broken down by chemical reaction to form a simpler substance.



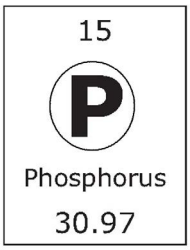
Isotope – An atom that has a different number of neutrons and so has a different mass number from the other atoms of an element.



Atomic Number – The number of protons in the nucleus of an atom.



Atomic Mass – The average mass number of the atoms in a sample of an element.



Chemical Symbol – A shorthand way of representing a specific element in formulae and equations.